UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,045	03/01/2006	Takemori Takayama	20060-0165A	1859

513 7590 01/15/2010

WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
GARCIA, ERNESTO	

ART UNIT	PAPER NUMBER
3679	

MAIL DATE	DELIVERY MODE
01/15/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/570,045	TAKAYAMA ET AL.	
	Examiner	Art Unit	
	ERNESTO GARCIA	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2009 and 01 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) *1-5,13-52,55 and 56* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-12,53 and 54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/1/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Restriction and Election of Species

Applicants' election without traverse of Group II, and species IIa, claims 6-12, 53, and 54 in the reply filed on September 29, 2009 is acknowledged.

Claims 1-5, 13-52, 55, and 56 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 29, 2009.

Drawings

The drawings are objected to because 1A-5A, 6A, 6B, 7A, 7C, 8A, 8B, 9A, 9B, 10A, 10B, 13A, 13B, 17, 18A, 19A, 20, 21A, 21C, 22, 23A, 23B, 26A, 26B, 27, 28A, and 29A contain extraneous text and should rather be identified with reference characters. Further, the bushings 11 in Figure 2 should contain the sintered layer as shown in Figure 3A. Reference characters 12 in Figures 2 and 4 should contain a lead line. Further, two additional lead lines with its own reference character 12 should be added to Figure 2 and 4 as these figures show four thrust bearings. The bucket in Figure 1B

should be made with solid lines. Figure 27 should be broken up into three figures where one is showing a table.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "6" and "6a" have both been used to designate the same part twice in Figure 2. This also occurs in Figure 4.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "10" and "26" have both been used to designate the same part in Figures 5A and 5B.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "19" and "29" have both been used to designate the same part twice in Figures 5A and 5B.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "18" and "28" have both been used to designate the same part twice in Figures 5A and 5B.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "17" and "27" have both been used to designate the same part in Figures 5A and 5B.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

The reference to patent literature 1-8 in the background of the invention should be replaced with the actual references listed on page 14 or rearrange the list found on page 14 to page 2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-12, 53, and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the recitation "having a relative density of 80% or more" in line 5 is a relative term of comparison, which renders the claim indefinite. In other words, relative to what is the relative density of the sintered compact being compared?

Regarding claim 7, the recitation “Mo compact” in line 2 makes unclear whether this is another material than the Mo in the sintered compact recited in claim 6, line 4, or the same material. The recitation "Cu or Cu alloy" in line 2 also makes unclear whether this is another material than the Cu or Cu alloy recited in claim 6, line 3-4 or the same material.

Regarding claim 54, the recitation “said bronze alloy phase” in line 4 lacks proper antecedent basis.

Regarding claims 7-12, and 53, the claims depend from claim 6 and therefore are indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6, 12, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeshi, JP-08-109450.

Regarding claim 6, Takeshi disclose, a sliding member comprising a back metal (the bearing) and a sintered sliding body (the coating). The sintered sliding body is composed of sintered compact containing Cu or Cu alloy in an amount of 10 to 95wt% and a residual made of Mo principally (see English Abstract and [006]). The sintered compact has a relative density of 80% or more.

Regarding claim 12, the back metal is a back metal of a sliding bearing, a substrate of a bearing shaft supporting a rotating body, or a substrate of a spherical bushing.

Regarding claim 53, at the outset, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the sintered sliding body is combined with the back metal, e.g., by sintering-bonding, sintering-infiltration-bonding, brazing, caulking, fitting, forcing, adhesion, bolt tightening, or clinching, is of little consequence when Takeshi possesses such sintered sliding body. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi, JP-08-109450.

Regarding claim 7, Takeshi, as discussed, discloses the porosity of 7% or less by volume. However, Takeshi fails to disclose the Mo in an amount of 35 to 75wt%. Applicant is reminded that where the general conditions of a claim are disclosed in the prior art discovering the optimum or workable ranges involves only routine skill in the

art. Therefor, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the amount of the Mo to be 35 to 75wt%. *In re Aller*, 105 USPQ 233. Further, one skilled in trying to find an optimum value would have attempted to try all values and seek an optimum value as claimed.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi, JP-08-109450, in view of Gonia et al., 5,780,170.

Regarding claim 8, the Mo compact is composed of Mo powder having an average grain size of 10um or less. However, Takeshi fails to disclose the sintered compact containing a solid lubricant, having an average grain size of 30um or more, in a content of 5 to 60% by volume or hard particle in a content of 0.2 to 10% by volume. Gonia et al. teach a sintered friction material with a solid lubricant having a content of 20-50 percent by volume, i.e., the graphite (col. 2, lines 2-3). It would have been obvious to apply the same solid lubricant having the same content of 20-50% by volume in a copper-based sintered friction material to provide a higher porosity thus displacing oil in the surface (col. 4, line 17-21). Therefore, as taught by Gonia et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the copper-based sintered compact with a solid lubricant, having an average grain size of 30um or more, in a content of 5 to 60% by volume to provide a higher porosity thus displacing more oil in the surface.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi, JP-08-109450, in view of Kawamura et al., 5,370,725.

Regarding claim 9, Takeshi, as discussed, disclose a Cu alloy phase in the sintered compact. However, the Cu alloy phase does not contain Sn (Tin) in an amount of 5 to 20wt%. Kawamura et al. teach in column 5, line 17-19, a copper-base alloy, such as a Cu-Sn as free copper amounting to 3 to 8%wt (col. 5, lines 4-7) to precipitate the copper. Therefore, as taught by Kawamura et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Cu alloy phase contain Sn in an amount of 5 to 20wt% to precipitate the copper in the Cu-Mo sintered compact combination.

Regarding claim 10, Takeshi teach, a Cu alloy phase in the sintered compact containing Si of 0.1 to 3wt% (See table 1, sample 10).

Regarding claim 11, Takeshi, as discussed, fails to disclose the sliding member comprising sliding surfaces of the sintered sliding body formed with recesses filled with a lubricating compound of a lubricating oil or wax, a lubricating resin, a solid lubricant and a lubricating compound of a solid lubricant or a wax. Applicant is reminded that placing recesses in a sliding surface is an obvious modification so that lubricant can be retained in the recesses as reservoirs thus housing lubricant for later use. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to provide sliding surfaces of the sintered sliding body with recesses to acts as reservoirs for housing lubricant.

Claim 54 is rejected under 35 U.S.C. 102(b) as being anticipated by Takeshi, JP-08-109450, in view of Nakashima et al., 5,582,281.

Regarding claim 54, the sintered sliding body is combined with the back metal by sintering-bonding. However, the sintered compact does not have a bronze alloy phase containing at least either Ti or Al in an amount of 0.5wt% or more. Nakashima et al. teach a sliding compact comprising a bronze alloy phase containing at least Al in an amount of 05wt% or more for its superior malleability, strength, and corrosion resistance (col. 3, lines 19-24). Therefore, as taught by Nakashima et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the sintered compact with a bronze alloy containing at least Al in an amount of 0.5wt% or more for its superior malleability, strength, and corrosion resistance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30AM-6:00PM. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/E. G./
Examiner, Art Unit 3679
January 15, 2010

/Daniel P. Stodola/
Supervisory Patent Examiner, Art Unit 3679